

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
27 April 2006 (27.04.2006)

PCT

(10) International Publication Number  
WO 2006/043785 A1

(51) International Patent Classification:  
A61M 1/10 (2006.01)

Gangnam-ku, Seoul 135-270 (KR). HWANG, CHANG  
MO [KR/KR]; #2-202 Dongsung Apt. 4-157, Dong-  
sung-dong Jongno-ku, Seoul 110-510 (KR). JEONG, GI  
SEOK [KR/KR]; 1459-55 Sangyeok-dong Buk-ku, Daegu  
702-010 (KR).

(21) International Application Number:  
PCT/KR2005/003495

(74) Agent: LEE, Won-Hee; 8th Fl. Sung-ji Heights II 642-16,  
Yoksam-dong Gangnam-ku, Seoul 135-080 (KR).

(22) International Filing Date: 20 October 2005 (20.10.2005)

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KM, KP, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA,  
MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ,  
OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL,  
SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC,  
VN, YU, ZA, ZM, ZW.

(25) Filing Language: Korean

(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT,

(26) Publication Language: English

[Continued on next page]

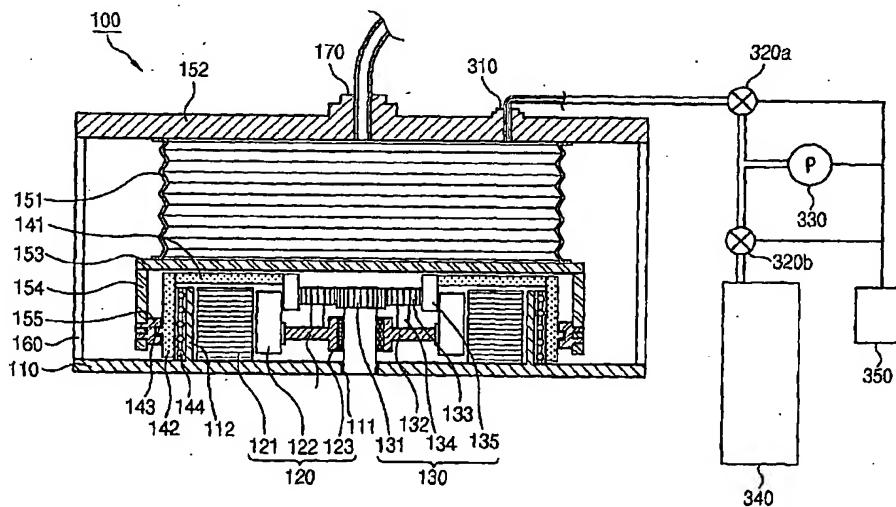
(30) Priority Data:  
10-2004-0085107 23 October 2004 (23.10.2004) KR

(71) Applicant (for all designated States except US): KOREA  
UNIVERSITY INDUSTRY AND ACADEMY COOP-  
ERATION FOUNDATION [KR/KR]; Korea University  
1 Anam-dong 5ga Seongbuk-ku, Seoul 136-701 (KR).

(72) Inventors; and

(75) Inventors/Applicants (for US only): SUN, KYUNG  
[KR/KR]; #116-302 Geurangvil Apt. Wolgye 3dong  
Nowon-ku, Seoul 139-956 (KR). LEE, KYU BACK  
[KR/KR]; #203-1203 Hanjin Apt. Donam 2dong Seong-  
buk-ku, Seoul 136-753 (KR). PARK, YONG DOO  
[KR/KR]; #101, Gukjeateuvilra 226-33 Jeongneung,  
2dong Seongbuk-ku, Seoul 136-846 (KR). SON, HO  
SUNG [KR/KR]; #3-809 Samseong Apt. 161 Dogok-dong

(54) Title: A BLOOD PUMP ACTUATOR AND A BLOOD PUMP SYSTEM THEREOF



WO 2006/043785 A1

(57) Abstract: A blood pump actuator to generate a driving force for driving a blood pump is disclosed. The blood pump actuator includes: a motor unit having a stator and a rotor, and rotating to generate a rotating force; a cam unit to convert the rotating motion of the motor unit into a rectilinear reciprocating motion; and a bellows unit having a bellows, which is expandable and contractible and contains a fluid therein; and an upper bellows plate and a lower bellows plate respectively attached to the upper and lower ends of the bellows, wherein the lower bellows plate moves upwards and downwards in a vertical direction according to the rectilinear reciprocating motion of the cam unit engaging with the lower bellows plate, and the bellows repeatedly expands and contracts according to the vertical movement of the lower bellows plate.

WO 2006/043785 A1



RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**Published:**  
— *with international search report*